

THE RECENT NATURALIZATION OF SIBERIAN ELM (*ULMUS PUMILA* L.) IN UTAH

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ABSTRACT: The history of naturalization of Siberian Elm (*Ulmus pumila* L.) in Utah is presented. Establishment of the species in nature occurred quickly after its introduction into Utah, and it has become a conspicuous part of the vegetation in lowland areas in Utah valleys. The earliest documented date of establishment in nature in Utah is 1935. The species was not cultivated in Utah and adjacent states prior to 1920. It was recommended for use in the western United States during the 1920's, and it was extensively planted during the 1930's and 1940's. The naturalization of Siberian Elm is similar to the earlier naturalization in Utah of tamarix (*Tamarix pentandra* Pall.) and Russian olive (*Elaeagnus angustifolia* L.).

INTRODUCTION

During the last two decades Siberian Elm, *Ulmus pumila* L., has become a conspicuous and abundant plant in wildland areas in Utah: pastures, streamsides, canyon bottoms, and vacant urban lots. Because of the evident rapidity of naturalization of this species an attempt is made in this paper to document its spread into nature and to determine the rate of naturalization. The naturalization of Siberian Elm is particularly interesting because it parallels the earlier introduction and naturalization of tamarix (Christensen, 1962) and Russian olive (Christensen, 1963) in the same area and often in the same habitats.

Siberian elm is a rapidly growing, medium-sized tree that is native from Turkestan to eastern Siberia and northern China (Little, 1961). It was introduced into the United States (Chico, Calif.) in 1908 (Dorset, 1917), and proved to be adapted as an ornamental tree (Bureau of Plant Industry, 1918). It has been recommended for use in the western United States (Mulford, 1926, 1928; Thomas, 1927; Metcalf, 1928; Dougall, 1942; Wilson, 1944; Little, 1949, 1961; U. S. Dept. Agr., 1949), but recently it has been considered undesirable in Utah for street plantings (Utah Shade Tree Comm., 1960; Provo City Shade Tree Comm., 1960). Gill (1949) described the good and bad features of the species. Data on reproduction of the Siberian elm was presented by Metcalf (1928), the Forest Service (1948), and Vines (1960). The naturalization of Siberian elm from Kansas to Minnesota was noted by Fernald (1950), and Steyermark (1963) observed that the species has occasionally escaped cultivation in Missouri.

Siberian elm has often been referred to as Chinese elm or

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Chinese dry-land elm. In Utah, Chinese elm is often used currently in reference to *Ulmus pumila*.

CULTIVATION OF SIBERIAN ELM IN UTAH

Siberian elms were planted in northern Utah near Providence about 1922 (Metcalf, 1928), but a survey of historical sources leads to the conclusion that Siberian elm was not planted in Utah prior to about 1920 (Paul, 1916; Mulford, 1920; Rydberg, 1922; Cannon, 1924, 1934; Tidestrom, 1925; Dougall, 1942; Reimschüssel, 1951).

During the 1930's and 1940's Siberian elm was planted commonly in Utah and the adjacent region, and by the late 1940's it was abundant in cities of the area (Preston, 1940; Dougall, 1942; Cottam, 1943; Reimschüssel, 1947, 1951, 1958; Gill, 1949; Little, 1949).

NATURALIZATION OF SIBERIAN ELM IN UTAH

The establishment of Siberian elm in wildland in Utah began shortly after its use as an ornamental, as early as 1935. Siberian elm was evidently uncommon in nature in Utah prior to 1940 because it was not included in any regional manual published before 1948 (Rydberg, 1922; Tidestrom, 1925; Garrett, 1936; Coulter and Nelson, 1937; Graham, 1937; Holmgren, 1948). The first published record of Siberian elm in nature in Utah was made by Nelson (1954).

Evidence about the date of naturalization of Siberian elm can be obtained from tree ring counts of older trees in wildland. Some large specimens of Siberian elm grow near Utah Lake west of Orem City. Two of these were studied. Increment borings from these trees indicate that they were established in 1935 and 1945. The trees have grown rapidly. The rates of growth in diameter were determined to be 0.8 in. and 0.9 in. per year and the terminal growth to be 1.6 ft. and 1.8 ft. per year for the older and younger trees, respectively. The 1935 date appears to be the earliest record of establishment of Siberian elm in nature in Utah. Certainly Siberian elm was not present in the vicinity of Utah Lake a decade earlier. Cottam (1926) did not include it in his comprehensive ecological study of the area.

DISCUSSION

Three old world woody species have rapidly invaded the lowland areas of the valleys of Utah in this century, and the vegetation of these areas is undergoing rapid change as these species are increasing in abundance. *Tamarix* (*Tamarix pentandra* Pall.) became established in nature prior to 1925 (Christensen, 1962), and Russian olive (*Elaeagnus angustifolia* L.) became established about 1924 (Christensen, 1963). These species were followed by Siberian elm reported on in this paper which became established about 1935. In contrast to the lowland areas in Utah, establishment of woody exotics (*Robinia pseudoacacia* L., *Ailanthus altissima* (Mill.) Swingle, *Prunus* spp., *Malus* spp.) in the more elevated portions of Utah has resulted in very minor change of the vegetation of those

areas. Continued ecological study should be carried on too explain the striking patterns of naturalization exhibited by tamarix, Russian olive, and Siberian elm in Utah and the vegetational changes resulting therefrom.

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